REDUCING EXCESSIVE SCREEN TIME THROUGH THE "DIGITAL BALANCE" STRATEGY: A TWO-WEEK INTERVENTION IN A RURAL LOWER SECONDARY SCHOOL

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ABSTRACT: This article examines the implementation and outcomes of the **"Digital Balance"** strategy, a two-week intervention designed to reduce excessive screen time among lower secondary students in a rural school. The strategy integrated time-management applications, daily digital-reflection tasks, and structured monitoring conducted by teachers with the support of parents. Data were gathered through pre- and post-intervention questionnaires and usage reports generated by the selected applications. Comparative analysis indicates a moderate reduction in non-academic screen time and an improvement in students' self-regulation regarding digital practices. The findings suggest that short, targeted interventions can contribute to enhanced digital well-being in school contexts, particularly in rural areas. Recommendations for extending the strategy and ensuring long-term sustainability are provided.

KEY WORDS: Digital well-being; Screen time reduction; Adolescent self-regulation; Time-management applications; Parental monitoring; Rural education.

1. INTRODUCTION

Excessive screen time among adolescents has become a persistent concern in contemporary education, with studies linking unregulated digital use to reduced attention, sleep disturbances, lower academic performance, and diminished well-being [1], [2]. These challenges are particularly visible in lower secondary settings, where students increasingly rely on mobile devices both inside and outside the classroom. In rural schools, limited digital literacy and reduced parental monitoring further accentuate the need for structured interventions targeting healthier online behaviour.

A wide range of digital tools has been developed to assist in monitoring and regulating screen use. These include applications such as Google Family Link, Forest, QualityTime, RescueTime, Focus To-Do, StayFocusd, Freedom, Offtime, Moment, Flipd, and AppBlock. Although diverse in functionality, these tools generally combine features such as usage tracking, activity reports, app blocking, focus timers, or motivational elements that support the development of self-regulation skills. At the same time, broader discussions around the digitalization of education highlight the challenges associated with prolonged online engagement, especially when educational content is increasingly delivered through digital platforms [3]. These concerns underline the importance of helping students establish balanced and healthy digital routines.

The present study introduces the "Digital Balance" strategy, a two-week intervention implemented in a rural lower secondary school. The strategy integrates four selected applications to promote responsible digital behaviour and to raise students' awareness regarding their daily online habits. The article outlines the design and implementation of the intervention and evaluates its impact on students' non-academic screen time.

2. METHODOLOGY

2.1 Context and Participants

The intervention was conducted in a rural lower secondary school located in northeastern Romania. The school serves a socio-economically disadvantaged community characterised by limited digital literacy and inconsistent parental supervision regarding technology use. A total of **62 students** aged **11–14 years** participated in the study, supported by **8 teachers** and **52 parents**. Participation was voluntary, and informed consent was obtained from all legal guardians. The overarching aim of the project was to enhance students' digital self-regulation and to reduce non-academic screen time through the implementation of a structured digital-well-being strategy.

2.2 Objectives of the "Digital Balance" Strategy

The **Digital Balance** strategy was developed around three pedagogical and behavioural objectives:

1. **To increase students' awareness** of their daily digital habits and the impact of screen overuse on well-being and academic performance.
2. **To reduce non-academic screen time** through the systematic use of monitoring tools, time-management applications, and distraction-minimising digital interventions.
3. **To enhance cooperation** among students, teachers, and parents in promoting responsible and mindful technology use.

These objectives reflect findings in the literature indicating that structured interventions are effective in supporting adolescents in developing healthier digital routines and stronger self-regulation skills [4], [5].

2.3 Overview of Digital Time-Management and Screen-Monitoring Applications

Prior to the selection of tools for implementation, a review of commonly used digital-well-being applications was undertaken. The following applications were analysed: Google Family Link, StayFree, Qustodio, Opal, Forest, Focus To-Do, QualityTime, RescueTime, Moment, AppBlock, StayFocusd, Freedom, Flipd, and Offtime. Collectively, these applications provide a range of functionalities, including:

- **Monitoring and analytics:** StayFree, QualityTime, RescueTime
- **Parental control:** Qustodio, Google Family Link
- **Distraction blocking:** Opal, Freedom, StayFocusd, AppBlock
- **Motivation and productivity:** Forest, Focus To-Do

Each application was assessed for usability, clarity of interface design, technical accessibility, and age-appropriateness for lower secondary students. Review criteria were informed by guidelines for digital-well-being tools and adolescent technology use [6], [7]. Based on this evaluation, four applications were identified as the most suitable for the school context.

2.4 Selection of the Four Applications Implemented in the Intervention

Four applications—**StayFree**, **Qustodio**, **Opal**, and **Google Family Link**—were selected due to their complementary features, accessibility, and pedagogical relevance.

2.4.1 StayFree

StayFree provides detailed visualisations of daily and weekly device usage. Its simple interface and user-friendly analytics facilitated students' understanding of their own digital habits, including peak usage periods and the distribution of time across different categories of apps.

2.4.2 Qustodio

Qustodio offers advanced parental-control features, such as app blocking, content filtering, screen-time limits, and real-time reports. Its structured monitoring capabilities have made it a widely implemented tool in school-based digital-well-being initiatives [8].

2.4.3 Opal

Opal focuses on distraction reduction by enabling scheduled "focus sessions" and restricting access to selected applications. This functionality supports intentional, uninterrupted study periods and aligns with research promoting self-regulated learning behaviours among adolescents.

2.4.4 Google Family Link

Google Family Link integrates well with the Android devices used by most students and permits adults to review activity summaries, approve installations, and apply usage restrictions. Its reliability and accessibility reinforced its suitability for coordinated school-and-home monitoring.

2.5 Description of the "Digital Balance" Strategy

The **Digital Balance** strategy was implemented over a **two-week period** and followed a structured sequence designed to progressively increase students' awareness, autonomy, and behavioural self-regulation. The strategy integrated technological tools with daily reflective practices, consistent with contemporary digital-well-being frameworks emphasising monitoring, reflection, and behavioural adaptation [4], [9].

Daily Components

- **Systematic screen-time monitoring:** Students used StayFree and Qustodio to document and review daily device use. Teachers introduced students to interpreting usage graphs, identifying patterns, and recognising moments of excessive consumption.
- **Guided focus sessions:** Opal was used during study periods to reduce digital distractions. Students scheduled focus sessions ranging from 20 to 45 minutes depending on workload, thereby practising intentional, uninterrupted work.
- **Reflective digital-awareness tasks:** At the end of each day, students completed short reflection prompts via Google Forms. Items focused on productivity, sources of distraction, self-regulation strategies, and perceived improvements compared to the previous day.
- **Teacher oversight:** Homeroom teachers reviewed daily usage summaries and reflection responses. Brief feedback discussions were integrated into advisory periods to reinforce productive behaviour and address persistent challenges.
- **Parental engagement:** Parents received weekly summaries from Google Family Link or Qustodio. These reports facilitated discussions at home regarding appropriate technology use and helped align household expectations with school objectives.

Weekly Structure

- **Week 1 – Orientation and baseline assessment:** Students were introduced to the four applications and completed the baseline questionnaire. Teachers demonstrated how to interpret app-generated data and modelled strategies for planning focus sessions.
- **Week 2 – Independent application and behavioural adjustment:** Students assumed greater responsibility for monitoring and regulating their screen use, setting daily goals, and reflecting on behavioural changes. Reflective entries emphasised comparing Week 1 and Week 2 usage patterns, identifying improvements, and acknowledging ongoing difficulties.

2.6 Data Collection and Analysis

A mixed-methods research design was employed to evaluate the effectiveness of the Digital Balance strategy.

Data Collection

Data were collected from three primary sources:

1. **Pre- and post-intervention questionnaires**, used to measure self-reported digital habits, perceived self-

regulation, and attitudes toward technology. These instruments incorporated Likert-scale items and short open-ended responses.

2. **App-generated usage reports**, obtained from StayFree, Qustodio, and Google Family Link, provided quantitative data on daily non-academic screen time, app categories, and patterns of device use.
3. **Teacher observation logs**, which documented student engagement, attention during class activities, use of focus sessions, and notable behavioural trends over the two-week period.

Data Analysis

Quantitative data from questionnaires and app reports were analysed using descriptive statistics, including mean values, frequency distributions, and comparative pre-post analyses. These analyses were used to identify changes in overall screen-time behaviour.

Qualitative data from open-ended questionnaire responses and teacher observations were analysed using thematic analysis. Codes were developed inductively to identify recurring themes related to motivation, challenges in self-regulation, and perceived benefits of the intervention.

Triangulation of data sources increased methodological validity and enabled a comprehensive interpretation of the strategy's impact on students' digital behaviours.

3. RESULTS

The results of the two-week intervention indicate substantial reductions in non-academic screen time and meaningful improvements in students' self-regulation, focus, and psychosocial well-being. Findings are presented in four categories: objective screen-time measures, app-specific behavioural indicators, teacher observations, and parental feedback, consistent with recommendations for evaluating digital-wellbeing interventions [10].

3.1 Objective Screen-Time Measures

Analysis of StayFree usage reports and daily averages revealed a **consistent and significant decline** in non-academic screen time across the intervention period. Reductions of this magnitude are in line with similar short-term digital-wellbeing programmes reported in the literature [11].

3.1.1 Daily Changes

Screen-time reductions ranged from **2 to 4 hours per day** on weekdays and **approximately 2–3 hours** during the weekend.

For example:

- **Monday:** ~9 → 6.5 hours
- **Tuesday–Thursday:** 8–9.5 → ~5.5 hours
- **Saturday:** ≥12 → 9.5 hours
- **Sunday:** 11.5 → 8 hours

3.1.2 Weekly Averages

- **Week 1 (Baseline):** 9.6 h/day
- **Week 2 (Intervention):** 6.6 h/day → **Reduction: 3.0 h/day** (−31.3%)

Evidence suggests that similar reductions can positively influence adolescents' attention, mood, and sleep quality [12].

3.2 App-Generated Behavioural Indicators

3.2.1 StayFree Category Data

Reductions occurred across all major non-educational categories:

- Social media: −1.7 hours
- Gaming: −0.7 hours
- Streaming: −0.8 hours
- Productivity/schoolwork: +0.2 hours

Slight increases in productivity-related activity are common when students adopt more structured digital routines [10], [11].

3.2.2 Qustodio Blocking and Limit Activity

Qustodio logs showed:

- Blocked attempts: **214 → 132** (−38.3%)
- Time-limit alerts: **147 → 89** (−39.5%)

These findings reflect greater compliance with time-management rules, an outcome also documented in controlled parental-supervision studies [13].

3.2.3 Opal Focus-Session Data

Focus-session engagement increased:

- Sessions/day: **0.8 → 1.9** (+137.5%)
- Average duration: 17 → 29 minutes
- Total daily focused work: 14 → 55 minutes

Increased use of focus-management apps has been associated with improvements in sustained attention and academic task completion [14].

3.2.4 Google Family Link Parent Dashboards

Google Family Link reported:

- Non-educational app use: **5.1 → 3.2 h/day** (−37.2%)
- Evening device use (after 21:00): **46% → 19%**

Late-night screen use is directly connected to sleep disruption in adolescents, and reducing it often leads to rapid improvements in sleep quality and emotional stability [12].

3.3 Teacher Observations

Teacher observation logs substantiated the improvements evident in the app-generated data.

- Improved focus during class: **28% → 61%**
- On-time assignment completion: **52% → 74%**
- Homework containing AI-generated errors: **37% → 14%**

Such patterns are consistent with behavioural-self-regulation research in middle-school populations [10], [14].

3.4 Parental Feedback

Parental reports indicated marked psychosocial improvements:

- Mood stability: **71%**
- Better sleep: **64%**
- Improved self-image: **58%**
- More positive interaction with family: **62%**
- Better peer interaction: **55%**

These domains are sensitive to screen-time reduction and improved digital habits, as shown in previous well-being studies [12], [15].

3.5 Integrated Interpretation of Findings

Overall, the results demonstrate that the **Digital Balance** strategy led to:

- a significant reduction in non-academic screen time,
- increased focus and academic engagement,
- reduced reliance on AI-generated shortcuts,
- improved emotional stability and social interactions,
- strengthened school–family cooperation.

The convergence of quantitative and qualitative data strengthens the validity of these outcomes and aligns with recommended models for evaluating digital-wellbeing interventions [10], [15].

4. CONCLUSIONS

The implementation of the **Digital Balance** strategy resulted in meaningful and measurable improvements in students' digital habits, academic engagement, and psychosocial well-being. Over the two-week intervention, non-academic screen time decreased by more than 30%, accompanied by increases in focused study periods, reduced distraction levels, and greater compliance with digital-use boundaries. These behavioural changes were supported by multi-source evidence, including app-generated data, teacher observations, and parental reports.

The strategy proved effective not only in reducing excessive device use but also in fostering essential self-regulation skills. Students demonstrated improved ability to plan and monitor their own behaviour, relied less on AI-generated shortcuts in homework, and engaged more actively during classroom activities. Parents also reported notable improvements in sleep quality, emotional stability, peer interaction, and family relationships, suggesting that the benefits of

the intervention extended beyond the school environment.

The results highlight the importance of combining monitoring tools with structured guidance, reflection, and family involvement in promoting healthier digital routines among adolescents. While the intervention was short-term, its positive outcomes indicate the potential for sustained behavioural improvement if the strategy is continued or expanded. Future research may build on these findings by implementing longer intervention periods, examining long-term retention of digital self-regulation habits, and integrating additional tools to support personalised digital-wellbeing pathways.

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